BIRD ROCK NUMBER

The American Museum Journal

Vol. I October, 1901 No. 11

A Popular Record of the Progress of the
American Museum of Natural History
With Supplementary Guide Leaflet

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American Museum Journal

Volume I OCTOBER, 1901 Number 11

NOTES AND NEWS.

WE desire to call particular attention to the supplement issued with this number of the JOURNAL. This consists of a "Guide Leaflet" to the Bird Rock Group recently installed in the southwest corner of the gallery of the north wing of the Museum. The leaflet has been prepared by Mr. Frank M. Chapman, the associate curator of the departments of Mammalogy and Ornithology, and is intended to assist the unprofessional student as well as the casual visitor in understanding not only this group, but also its relations to other exhibits in the department of Ornithology and elsewhere in the building.

Separate copies of this leaflet may be obtained from the floor attendant, or at the entrance to the building.

THE past summer has been a season of great activity, especially in the several departments of the Museum that send expeditions into the field for the collection of specimens. Some notes of the results of the work of the various parties will be found in the present and future numbers of the JOURNAL.

LECTURES.

THE DEPARTMENT OF PUBLIC INSTRUCTION announces the following lectures for the first half of the ensuing season :

To Teachers of the Public Schools, Saturday mornings at 10:30 :

Oct. 26th and Nov. 2d.—The Pan-American Exposition of 1901.

Nov. 9th and 16th.—London : The City and the Thames.

Nov. 23d and 30th.—London : Its Museums and Galleries.

Dec. 7th and 14th.—London : Its Environs.

The Members' Course will be given Thursday evenings at 8:15, with the following programme :

Nov. 21st.—The Pan-American Exposition of 1901.

Dec. 5th.—London : The City and the Thames.

Dec. 12th.—London : Its Museums and Galleries.

Dec. 19th.—London : Its Environs.

PROFESSOR BICKMORE had the honor of being appointed a juror on the entire United States exhibit at the Pan-American Exposition, and therefore was accorded special privileges for photographing the government exhibits at the Fair. The illustrations form a special

feature of his official report, and slides from the same negatives are to be used in his lectures.

The negatives for Professor Bickmore's three new lectures on London have been prepared by Messrs. J. H. Abegg and Henri Hoffer, who also prepared the wonderful illustrations of Paris and the Universal Exposition which were used for the lectures last year. These gentlemen received special privileges in London, particularly the British Museum and the Museum of Natural History, and also the National Gallery; they had permission also to photograph the interior of palaces and private grounds of particular interest in and near the Metropolis. Thus there has come to the American Museum an especially valuable and complete set of views of London, which will no doubt be appreciated as much as was the set of last year on Paris.

THE PUBLIC LECTURES given under the coöperation of the city Department of Education with the American Museum of Natural History began Tuesday evening, October 8th, with the following programme for successive Tuesday evenings until the middle of December:

October 8th.—Russia, by Peter Mac Queen.

October 15th.—Scotland and Burns, by Peter Mac Queen.

October 22d.—The Passion Play, by John C. Bowker.

October 29th.—A Tramp through Switzerland, by E. C. Chorley.

November 5th.—Saunterings in Merrie England, by Thomas Edw. Potterton.

November 12th.—The American in Holland, by Dr. Wm. E. Griffis.

November 19th.—The Castle-Bordered Rhine, by Thomas Edw. Potterton.

November 26th.—Imperial Berlin and other German Cities, by Prof. H. E. Northrop.

December 3d.—Constantinople, by Jesse L. Hurlbut.

December 10th.—Rome, by Wm. Freeland.

December 17th.—Cities of the Baltic, by G. R. Hawes.

The popularity of the Tuesday evening courses in the past few years has been such that a new course for Saturday evenings under the same auspices has been inaugurated this year. It began October 19th with the following programme:

Six lectures on Astronomy by Prof. Robert W. Prentiss—

October 19th.—The Sun; Its Phenomena.

October 26th.—The Sun; Spectrum Analysis, Light and Heat.

November 2d.—The Moon; Its Appearance, Motions, Scenery, and Physical Condition.

November 9th.—The Planet Mars; Is it Inhabited?

November 16th.—The Planets; Their Telescopic Appearance and Physical Condition.

November 23d.—Comets and Meteors; Their Mutual Relations.

Three lectures on Nature Study by Edward F. Bigelow—

November 30th.—Journeys about Home Roadsides, Fields and Forests.
December 7th.—Travels in a Swamp.
December 14th.—Haunts of Nature.

All of these lectures are profusely illustrated by stereopticon views.

CONVENTIONS.

There will be a meeting of the American Ornithologists' Union in the large lecture hall of the Museum from the 12th to the 14th of November inclusive. Various papers and illustrated lectures will be presented, and the general public is cordially invited to attend the sessions. All who are interested in birds and bird-lore will find much of value in these meetings.

On the 14th of November the national conference of the Audubon societies of America will be held at the Museum. As the meeting of the Ornithologists' Union occurs at the same time and place, the conventions of the two bodies will be merged for the time being. A cordial invitation is extended to the general public to attend the sessions.

DEPARTMENTS OF MAMMALOGY AND ORNITHOLOGY.

Dr. J. A. Allen, Curator of the Department of Mammalogy and Ornithology, has recently returned from a three-months' trip abroad, the purpose of the trip being scientific study at foreign museums, particularly at the British Museum. He took with him for comparison with the type specimens and other historic material quite a collection of mammals from South America. His work abroad was principally at the British Museum (South Kensington), where five weeks were spent in studying the rich collection of South American mammals, which contains the types of many species described by Waterhouse, Bennett, Tomes, Gray, Thomas, and others. Thanks are due to the Curator of the Department of Mammals at the British Museum, Mr. Oldfield Thomas, for the freest access to the collections and for valuable personal assistance.

The material taken abroad by Dr. Allen included a complete suite of the mammals of Patagonia, collected by the Princeton Expeditions, and through the opportunities available at the British Museum the species were all satisfactorily determined. Also much original work was done on the South American Opossums of the genus *Didelphis*, and on various genera of the family *Octodontidæ*.

The recent additions to the Department of Mammalogy and Ornithology include a large and very

important collection of mammals and birds from the State of Vera Cruz, Mexico, which contains good series of specimens of several species not before represented in the Museum collection. The Museum has also received from the Duke of Loubat a valuable collection of mammals, collected chiefly in the State of Jalisco, which adds much valuable material. A third collection of mammals and birds has been received from Venezuela, collected by Mr. Klages; and a final instalment of birds and mammals of the H. H. Smith Collection from the Santa Marta District of Colombia has also come to hand.

Each of these shipments includes a number of very desirable specimens available for mounting for exhibition, as well as important material for the investigation of South American mammalogy.

During the past summer, Mr. Frank M. Chapman, the associate curator of the Departments of Mammalogy and Ornithology, made an extended trip in the western British Possessions. In Manitoba he secured material for groups of cormorants, Wilson's phalarope, and the yellow-headed blackbird. In the Selkirk Mountains he secured the specimens needed for a group of the American dipper or water-ousel.

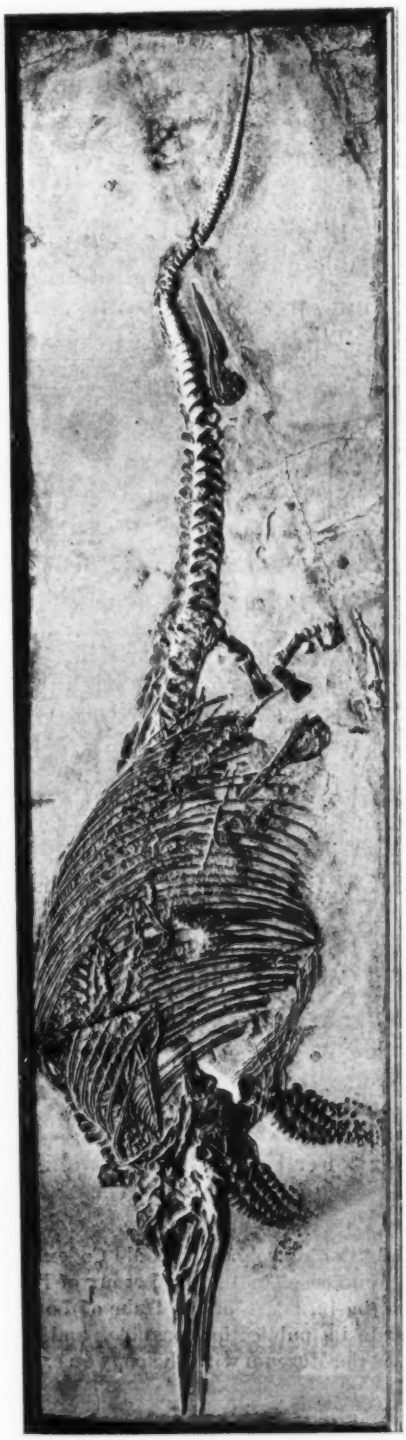
DEPARTMENT OF GEOLOGY.

The Department of Geology sent Dr. E. O. Hovey, the associate curator, into the Black Hills region of South Dakota and Wyoming during July and August to collect fossils from the marine Jurassic beds exposed there. He obtained a large amount of valuable material illustrating species heretofore almost entirely unrepresented in the Museum. A portion of what was sent in is now on exhibition in Alcove No. 14, on the west side of the Geological Hall (No. 405) and in one of the Cretaceous cases in the centre of the hall.

Dr. A. C. Haddon, Professor of Anthropology in the University of Cambridge, England, is spending several weeks in the United States studying the collections in that branch of science. While in New York he is the guest of the Museum.

AN ICHTHYOSAUR WITH YOUNG.

THE American Museum has just received a royal gift from the Museum of Stuttgart, Würtemberg. It comes through Prof. Eberhard Fraas, who made a long tour of exploration in the fossil beds of the Rocky Mountain



ICHTHYOSAURUS QUADRISCISSUS QUENSTEDT.

region with Professor Osborn last spring. The fossil is a superb specimen of an Ichthyosaur, from the Jurassic quarry of Holzmaden, a little town not far from Stuttgart, which is famous for its Ichthyosaur remains. The specimen just received by the Museum is on a slab, 9 feet 3 inches in length and 2 feet 5 inches in breadth. It is a perfectly preserved example of the species *Ichthyosaurus quadriscissus*. Ichthyosaurs, or marine, externally fish-like fossil reptiles, have been found in abundance both in Germany and in England, but what renders this specimen unique is the fact that it contains indications of several young animals within the body-cavity of the mother, thus giving a beautiful demonstration of the fact that the Ichthyosaurs were viviparous, bringing forth their young alive. The young animals are surprisingly large, the head of the largest being 9½ inches long, or half as large as that of the mother Ichthyosaur. The backbone and paddles of the young are well developed and prove that they were abundantly able to swim and take care of themselves immediately upon birth. This is one of the most remarkable features of the adaptation of the Ichthyosaurs to marine life. The ancestors of these animals undoubtedly lived upon land and were oviparous—but as they became more and more

sea-faring in habit there must have been a gradual retention of the young in the abdominal cavity until a later and later period of development. The visits of marine animals to the land for the purpose of egg-laying are very hazardous, as is shown by the life of the marine Turtles, which also live far out at sea and are always obliged to return to the seashore to deposit their eggs.

THE DUKE OF LOUBAT'S REPRODUCTIONS OF THE ANCIENT MEXICAN CODICES.

THE Museum has just received from the Duke of Loubat his latest reproduction of Mexican codices, the Codex Ferjevary-Mayer. The original is in the Free Museum of Liverpool, having been purchased by Mr. Mayer from the collection of M. Ferjevary of Budapest. Its whereabouts seems to have been lost to students until about six years ago, when it was noticed by Mr. M. H. Saville in the back of a basement case in the museum in Liverpool. It is reproduced in Kingsborough's great work, but the pages are not given in their proper sequence. The present edition (Loubat's) is an exact facsimile of this most important codex, which was made on deerskin, and not maguey-paper as has been generally supposed. The pages are nearly square, measuring $6\frac{3}{4} \times 6\frac{7}{8}$ inches. It contains two blank pages forming the covers, the work being folded screen fashion, and forty-four pages of paintings in colors. The book comes to us with a short introduction by the Duke of Loubat, but a study of the codex by the eminent Americanist, Professor Seler of Berlin, is now in press, and will soon be issued.

This is the seventh of the magnificent reproductions—copies of which are now on exhibition in our Mexican Hall—which the student of American antiquities owes to the liberality and intelligence of this patron of science.* They are as follows:

Codex Vaticanus, No. 3773, published 1896.

Codex Borgia, published 1898.

Codex Cospiano, published 1899.

Codex Telleriano-Remensis, published 1899.

Codex Vaticanus, No. 3738, published 1900.

Tonalamatl Aubin, published 1900.

Codex Ferjevary-Mayer, published 1901.

* In addition, we should include Codex Borbonicus, published in 1899 by Leroux of Paris, through the initiative of the Duke of Loubat, who made its publication possible, and who presented the Museum with the copy on exhibition here.

SUMMER WORK OF THE DEPARTMENT OF VERTEBRATE PALÆONTOLOGY.

FOUR expeditions for fossil vertebrates were sent out by the Department. The season opened inauspiciously with the failure of the expedition to the Black Hills region for Dinosaurs, all the prospects which had been located proving worthless. But the subsequent successes in other fields were so brilliant as to more than compensate for this early failure.

The old Bone Cabin Quarry which was discovered in 1898, and has been worked on an extensive scale for two years past has yielded remarkable results. The shales of the quarry gave place to sandstones, which were more rich in skull material. In the season of 1900 two skulls were found, both unique, one of a carnivorous Dinosaur and one of the herbivorous Sauropod *Morosaurus*. During the past summer another equally complete carnivorous Dinosaur skull with lower jaws has been found, also a less perfect skull, believed to belong to *Brontosaurus*, and portions of three others. These, however, while the most important discoveries, represent only a small part of the splendid Dinosaur material found in this quarry, which filled 50 boxes. Toward the end of the season the fine collection found by Mr. W. H. Reed, the well-known collector, was secured, together with all the rights of two of his prospects; one of them is a quarry which promises very well. This party, consisting of Messrs. Granger and Kaisen, returned about October 15th.

The signal event of the year is the gift of the special fund of $15,000 for the exploration of fosssil horses, by a generous friend of the Museum who desires his name to be withheld for the present. The Museum already has a fine collection of fossil horses, secured through the purchase of the Cope Collection and through expeditions sent out since 1890. But this liberal gift has enabled the curator to plan for exhibition and exploration on an unprecedented scale; so the evolution of the horse can be demonstrated to the public not only by means of the feet and skulls, as at present, but by a long series of mounted skeletons. Complete fossil skeletons are most rare, and it is therefore a cause for congratulation that the Eastern Colorado expedition, led by Dr. Matthew and Mr. Brown, and including Mr. Thompson of the Museum and Dr. Loomis of Amherst, secured a perfect skeleton of *Anchitherium*, a collateral ancestor of the horse, and materials

for a complete composite skeleton of Protohippus, believed to be one of the true ancestors of the horse, besides much comparative material. Almost equal good fortune attended the Texas expedition for fossil horses led by Mr. J. W. Gidley. The first day's exploration resulted in the discovery of the remains of a small herd of *Protohippus*, including eight skulls and other parts of the skeleton; these, though somewhat crushed, are very complete.

The expeditions for fossil horses are not precluded from bringing in other materials which are found *en route*, and noteworthy discoveries have been made by both parties of fossil mammalian contemporaries of the horses, especially *Amphicyon*, the giant dog of the period, the skull of a Mastodon, and the shell and tail of a Glyptodont related to *Hoplophorus* of the Brazilian bone caves. Altogether 20 boxes were sent from Texas and 32 boxes from Eastern Colorado, the latter containing remains of 110 animals belonging to numerous species, including Camels, Rhinoceroses, and Oreodonts.

In the spring an extensive trip through the Jurassic of Colorado was made by Professor Osborn, accompanied by Professor Eberhard Fraas of Stuttgart. The latter has shown his friendship for this Museum by presenting in exchange a magnificent specimen of *Ichthyosaurus quadriscissus* nearly nine feet in length, and containing several young icthyosaurs in the abdominal cavity. This is believed to be the most interesting specimen of its kind which has yet reached this country; and the Museum is greatly indebted to Professor Fraas for its selection.

Three important purchases have been made. (1) The collection and quarry of Dinosaurs from Mr. Reed, alluded to above. (2) A magnificently preserved predaceous fish from the Kansas Cretaceous, commonly known as *Portheus molossus*. It is a few inches under 16 feet in length and lacks only the central portion of the spines and ribs, the vertebral series, head, and tail being complete. It was found by a well-known explorer of the fossil vertebrates, Mr. Charles H. Sternberg. The specimen will be appropriately mounted in the Marine Reptile corridor, immediately over the contemporary Mosasaur skeleton from the same region. (3) The skull of a fossil Mammoth from Texas, with tusks 11 ft., 4½ in. in length. This will crown the series of fossil proboscidean skulls, which now comprises two complete primitive Mastodon skulls, one very primitive Elephant skull (*Elephas mirificus* Leidy) and two fine Mammoth skulls including the one above mentioned. H. F. O.

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PART V.—A Skeleton of Diplodocus. By Henry Fairfield Osborn. Pp. 189–214, pll. xxiv–xxviii. October 25, 1899. Price of Parts IV and V, issued under one cover, $2.00.

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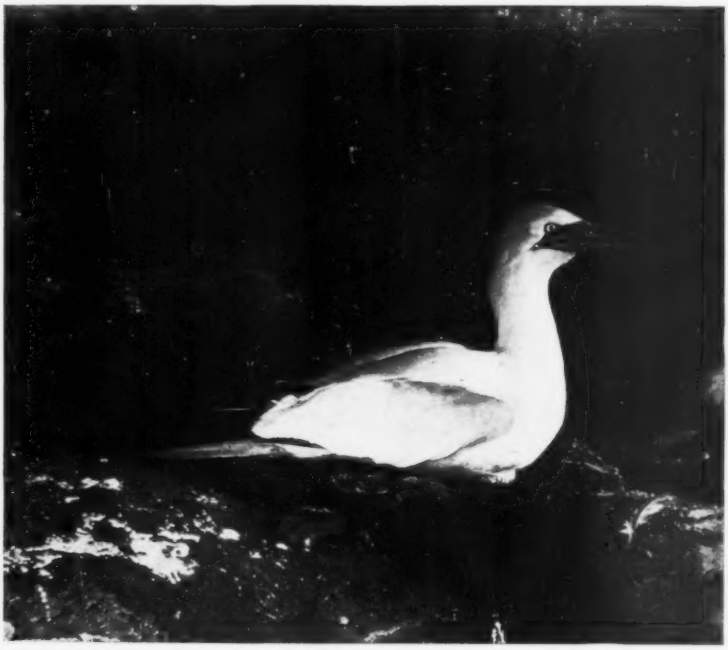
AMERICAN MUSEUM OF NATURAL HISTORY

The Bird Rock Group



BY

Frank M. Chapman

Associate Curator of Mammalogy and Ornithology

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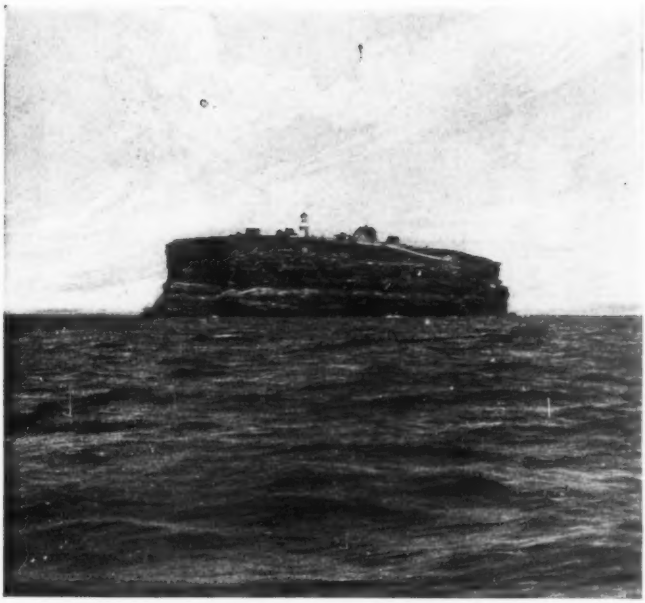
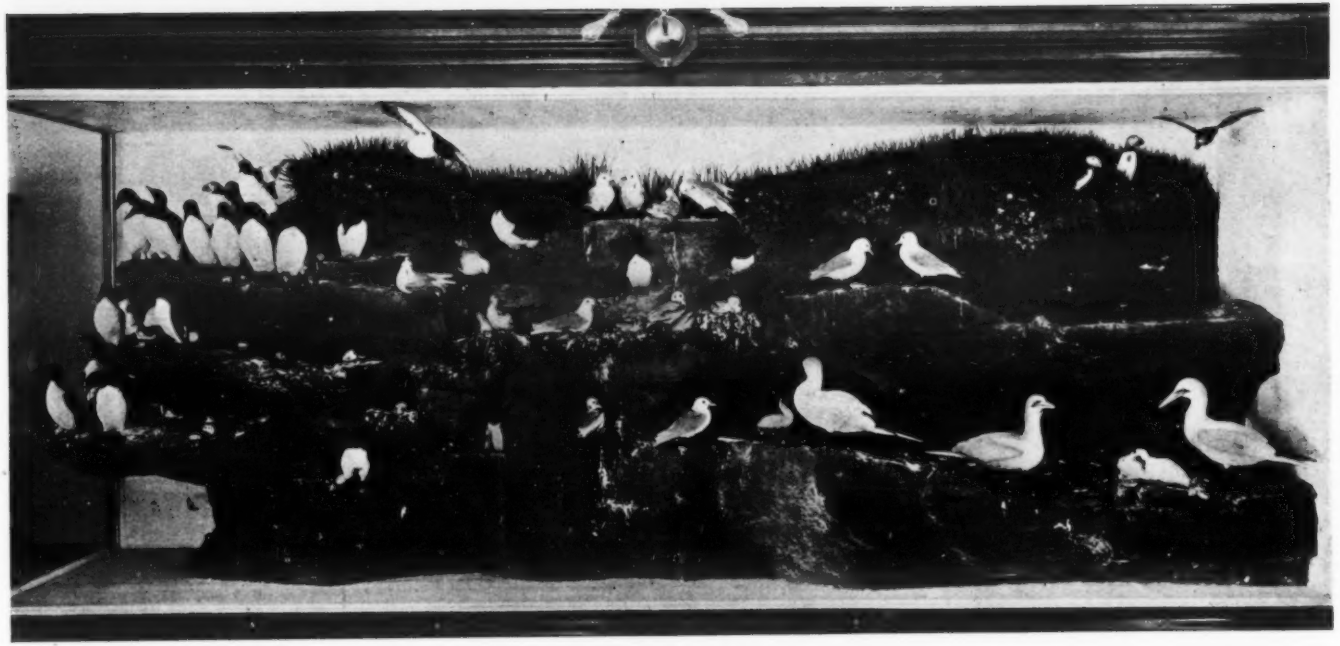
Guide leaflet no. 1



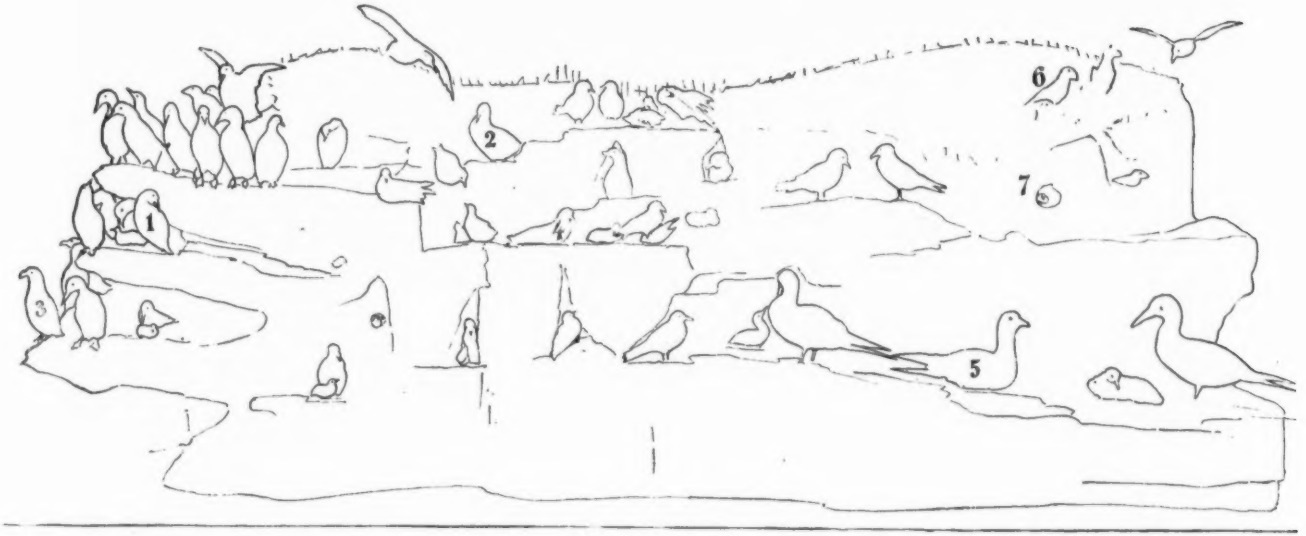
BIRD ROCK FROM THE SOUTHWEST.
Distant about one half a mile.

(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)



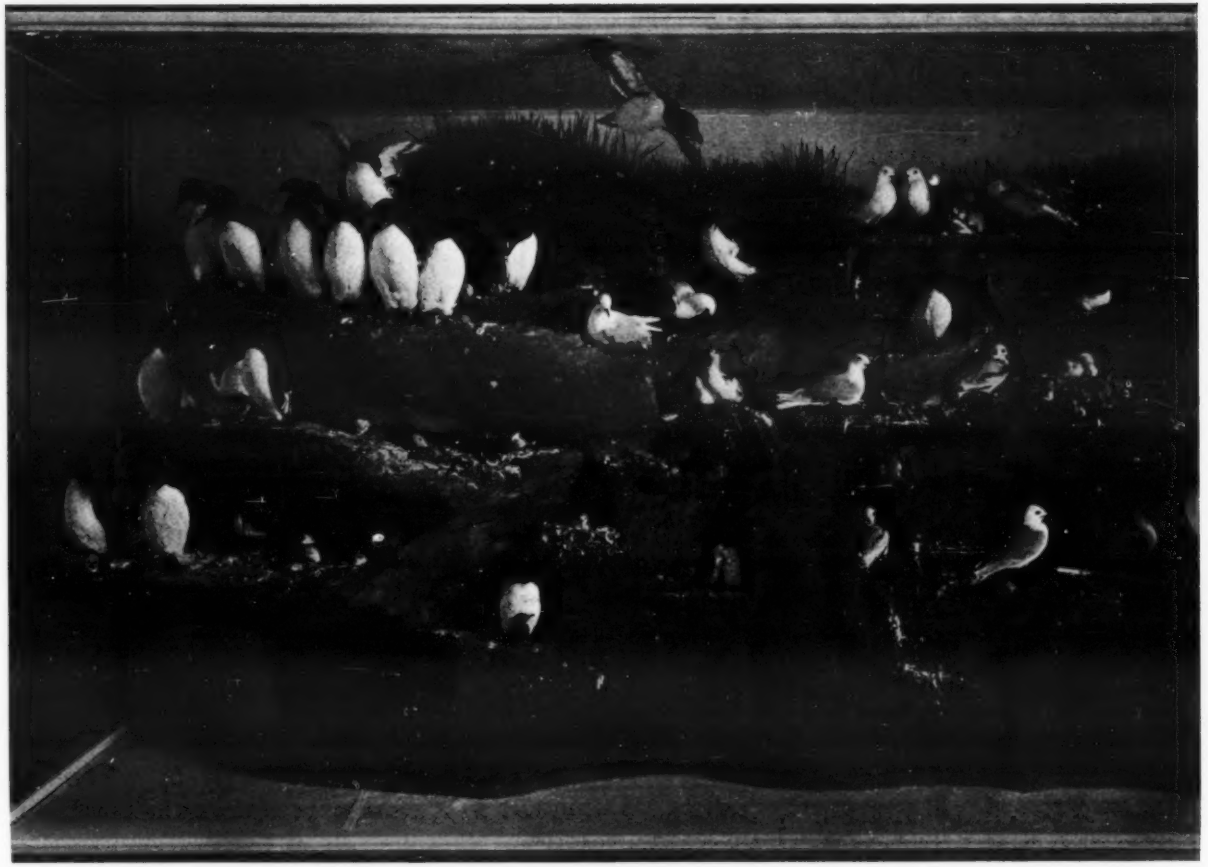
THE BIRD ROCK GROUP.

The group is 17 feet 6 inches long, 6 feet 10 inches high, and contains 73 birds



KEY TO THE BIRD ROCK GROUP.

1, Common Murre. 2, Brünnich's Murre. 3, Razor-billed Auk. 4, Kittiwake Gull. 5, Gannet. 6, Puffin. 7, Leach's Petrel.



LEFT HALF OF THE GROUP.

A DESCRIPTION OF THE BIRD ROCK GROUP ON EXHIBITION IN THE AMERICAN MUSEUM OF NATURAL HISTORY, REPRESENTING A PORTION OF A "BIRD ISLAND" OF THE NORTH ATLANTIC AND THE NESTING-HABITS OF ITS OCCUPANTS.

By Frank M. Chapman,

Associate Curator of the Department of Mammalogy and Ornithology.

Islands as Bird Protectors.

To the preserving influence of island-life we owe the continued existence of many birds which have long ceased to live, or, at least, to nest, on the mainland. This is true of the great oceanic islands as well as of the sand-bars, reefs, and rocks on which sea-birds rear their young, and even of the tiny islet of reeds or vegetable mould which forms the nest of the Grebes (see Group of Pied-billed Grebes in the Main Bird-Hall). In every instance, however, whether the island be a thousand square miles or one square foot in extent, it owes the preservation of its bird-life to the same cause, and this cause is the entire or comparative absence of bird enemies.

Oceanic islands, or those which have had no connection with the mainland, are, as a rule, without terrestrial mammals, and consequently destructive animals such as wolves, foxes, cats, both wild and domesticated, minks, weasels, etc., are wanting, even when the conditions are favorable to their existence, while the barren rocky islets, reefs, and sand-bars are uninhabited, not only by these predaceous species, but also by the birds' worst enemy—man.

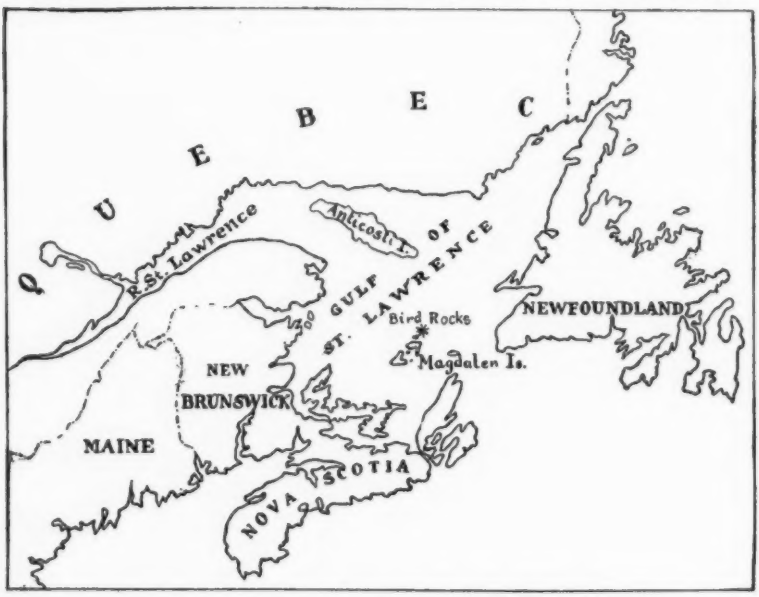
Thousands of instances could be cited to illustrate the importance of the part played by islands in protecting birds, but we need go no farther than our Atlantic coast to be convinced that were it not for islands we should long ago have lost a number of birds which now never nest on the adjoining mainland. For example, practically all our remaining Terns or "Sea Swallows" now breed only on islands, the remaining large colonies of these birds off the New York and Massachusetts coasts being found on

LEFT HALF OF THE GROUP.

Gardiner's, Fisher's, Muskeget, and Penikese Islands. Martha's Vineyard, between the two last named, contains the sole survivors of the Heath Hen or Eastern Prairie Chicken (see gallery, case J). Certain islets along the coast of Maine form suitable homes for Herring Gulls (see gallery, case B), and going farther north, into the Gulf of St. Lawrence, we find several rocky islets, which, either because of their isolation or precipitousness, are ideal resorts for sea-fowl. Chief among these is

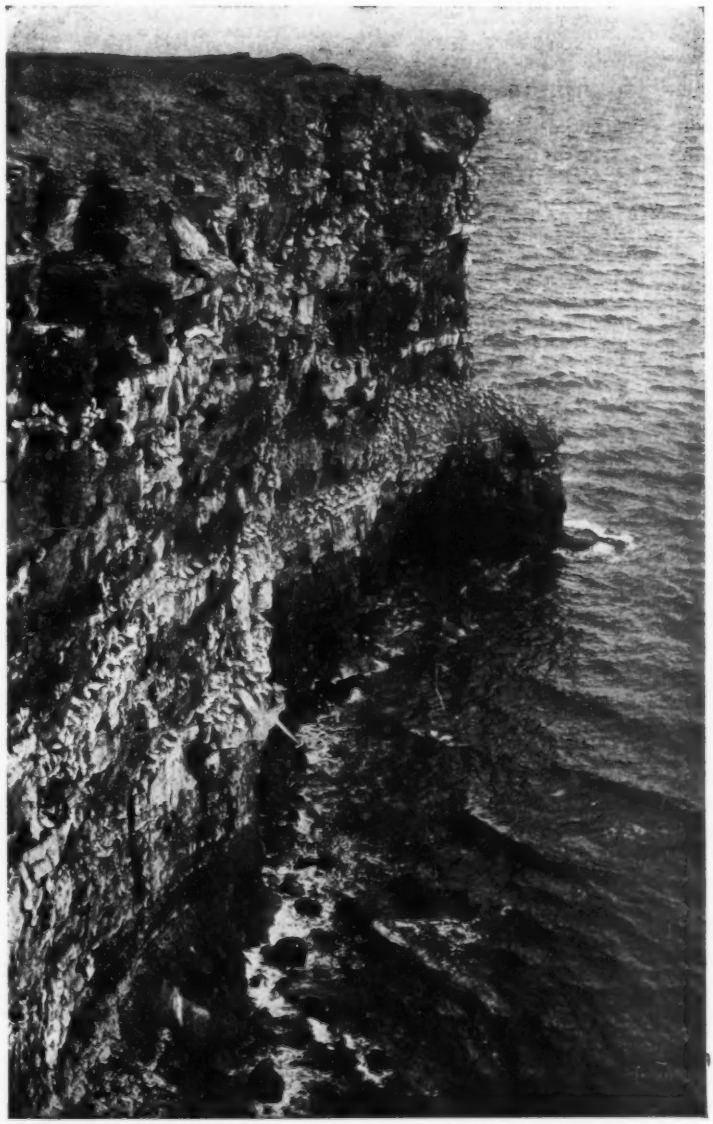
Bird Rock.

Bird Rock, and its neighbor Little Bird Rock, belong to the Magdalen Group, and are situated fifty miles northwest of Cape



MAP SHOWING LOCATION OF THE BIRD ROCKS.

Breton, the nearest mainland, and twelve miles east of Bryon Island, the nearest member of the same group. It is 351 yards long, from 50 to 140 yards wide, and rises abruptly from the sea to a height of from 80 to 140 feet. Its vertical rocky walls are weathered into innumerable ridges, shelves, and crevices — fit sites for the nests of the sea birds which for centuries have made



NORTH SIDE OF THE ROCK, WEST OF THE CRANE.
(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)

the Rock their home. The birds, furthermore, have found an abundance of food in the surrounding waters.

Bird Rock is the home during the summer of seven species of birds. Named in the order of their abundance they are: Common and Brünnich's Murres, Razor-billed Auks, Gannets, Kittiwake Gulls, Puffins, and Leach's Petrel. Gannets are known to nest in only one other place in this country, Bonaventure Island, about 150 miles northwest of Bird Rock, and the remaining six species rarely or never nest on the mainland; facts which illustrate how well the Rock has filled its office of bird protector. We shall see, however, that owing to man's agency the inhabitants of Bird Rock have greatly decreased in numbers since its discovery.

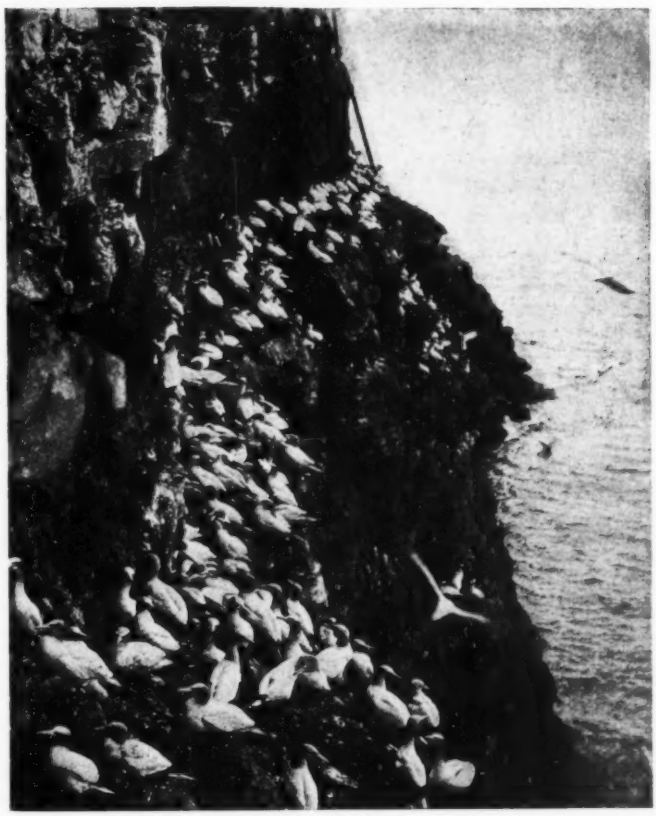
History of Bird Rock.

The history of the Bird Rocks begins with their discovery by Jacques Cartier, the venturesome French navigator, in June, 1534. Cartier wrote: "These islands were as full of birds as any meadow is of grass, which there do make their nests, and in the greatest of them there was a great and infinite number of that that we called Margaulx that are white and bigger than any geese, which were severed in one part. In the other were only Godetz and Great Apponatz, like to those of that island that we above have mentioned. We went down to the lowest part of the least islands, where we killed above a thousand of those Godetz and Apponatz. We put into our boats as many as we pleased, for in less than an hour we might have filled thirty such boats of them. We named them the islands of the Margaulx."

The birds Cartier called "Margaulx" were undoubtedly Gannets; his "Godetz" were probably Murres and Razor-bills; while there is every reason to believe that his "Great Apponatz," which he had previously found and unmistakably described, were the now extinct Great Auk. It is also of interest to know that at this time, during the proper season, the Rocks were the home of Walrus.

Audubon, whose energy in exploration no ornithologist has surpassed, was the first naturalist beholding Bird Rock to leave us a description of its wonders. On June 14, 1833, during his cruise to Labrador, in the Schooner *Ripley*, he wrote in his journal the following graphic account of the day's experiences: "About

ten a speck rose on the horizon, which I was told was the Rock. We sailed well, the breeze increased fast, and we neared the object apace. At eleven I could distinguish its top plainly from the deck, and thought it covered with snow to the depth of



GANNETS ON NESTS.
Photographed from nature by F. M. Chapman.
(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)

several feet; this appearance existed on every portion of the flat projecting shelves. Godwin [the pilot] said, with the coolness of a man who had visited this Rock for ten successive seasons, that what we saw was not snow but Gannets. I rubbed my eyes,

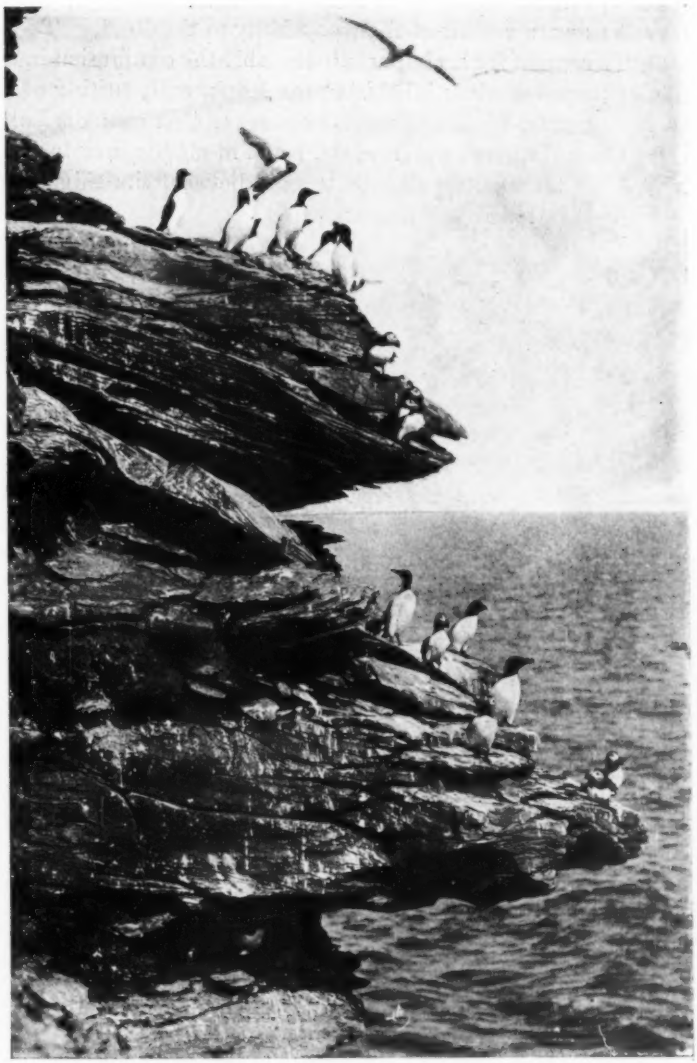
took my spy-glass, and in an instant the strangest picture stood before me. They were birds we saw—a mass of birds of such size as I never before cast my eyes on. The whole of my party stood astounded and amazed, and we came to the conclusion that such a sight was of itself sufficient to invite any one to come across the gulf to view it at this season. The nearer we approached, the greater our surprise at the enormous number of these birds, all calmly seated on their eggs or newly hatched broods, their heads all turned to windward and toward us. The air above for one hundred yards, and for some distance around the whole Rock was filled with Gannets on the wing, which, from our position, made it appear as if a heavy fall of snow was directly above us." [1]

After this description one can readily imagine Audubon's disappointment when the freshening wind prevented his landing on the Rock, and we therefore must turn to the account of Dr. Henry Bryant as that of the first naturalist to set foot on Bird Rock. This was on June 23, 1860, when, after a climb which he characterized as both "difficult and dangerous," Dr. Bryant reached the top of the Rock. In addition to the birds found living on the sides of the Rock, he states that its entire northerly half was tenanted by Gannets, and after measuring the area they occupied, he estimated that this one colony alone contained no less than 100,000 birds, while the number living on the sides of the Rock and on Little Bird he placed at 50,000.[2]

Bryant was followed by Maynard, Brewster, Cory, Lucas, and others, but in the meantime a change had occurred which made the Rock more accessible and at the same time greatly reduced its feathered population. In 1869 a lighthouse was erected on its summit and within three years the colony of Gannets nesting there decreased from 100,000 to 5000 birds; while nine years later only 50 birds remained.

This practical extermination of the summit-nesting birds was due in part to the light-keepers, who evidently did not care for the close companionship of 50,000 pairs of by no means sweet-voiced birds, and, later, to the use of a cannon, which, during the fogs so prevalent in this region, was discharged at short

[1] Audubon and his Journals, I., p. 360.
[2] Bryant, Proc. Bost. Soc. Nat. Hist., 1861.



GANNET (FLYING OVER), MURRES PUFFINS, AND RAZOR-BILLED AUKS.
Photographed from nature by F. M. Chapman.
(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)

intervals to warn vessels of their proximity to the Rock. To the use of this cannon is also in part attributable the diminution in the ranks of the other birds inhabiting the Rock, and, writing of his visit in 1881, Mr. William Brewster remarks: "At each discharge the frightened Murres fly from the Rock in clouds, nearly every sitting bird taking its egg into the air between its thighs and dropping it after flying a few yards. This was repeatedly

THE LANDING AT THE BASE OF THE ROCK, SHOWING CRATE.
(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)

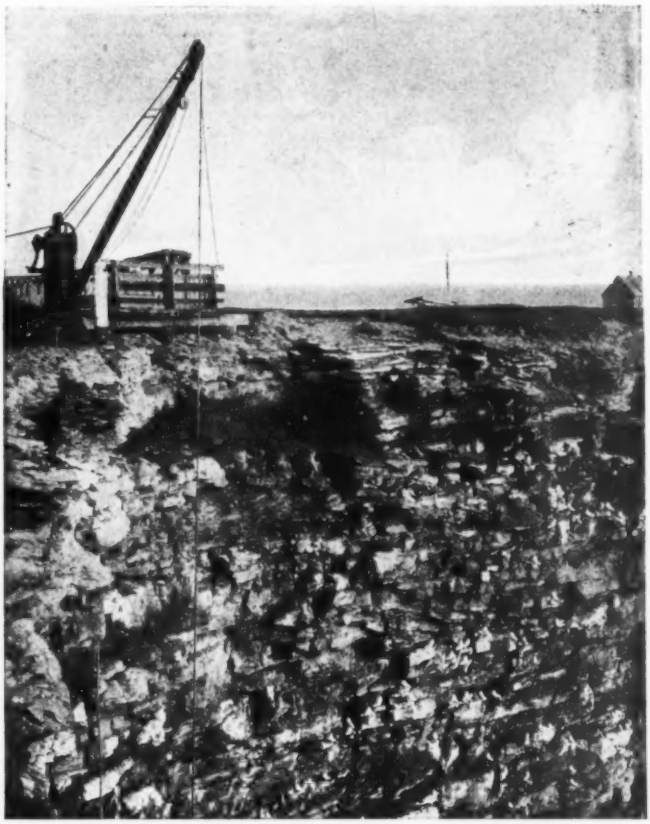
observed during our visit, and more than once a perfect shower of eggs fell into the water about our boat." [1]

Bird Rock To-Day.

In spite of the great decrease which has occurred in Bird Rock's population, it still remains one of the ornithological wonders of our Atlantic coast. Unfortunately, however, the

[1] For a further history of Bird Rock see Brewster, Proc. Bost. Soc. Nat. Hist., 1883. Lucas, "The Auk"—New York—V., 1888, pp. 129, 278; also, in connection with the identity of Apponatz, Hardy, *Ibid.*, 380, Chapman, "Bird Studies with a Camera."

wholesale collecting of eggs and wanton killing of birds by fishermen, combined with the results of firing the gun-cotton bombs, which have superseded the cannon, are causing a continued diminution in the number of birds inhabiting the Rock,



THE LANDING ON TOP OF THE ROCK, SHOWING CRANE.
(From "Bird Studies with a Camera," by permission of D. Appleton & Co.)

and unless the Canadian Government soon takes proper steps to afford them protection, it is quite probable that in time only a fraction of their present numbers will remain. To make, therefore, a permanent record of this characteristic phase of island life

the writer visited the Rock in July, 1898, and procured for the American Museum of Natural History the material and photographs which made possible the preparation of this group.

It is quite as difficult to land on Bird Rock to-day as it was in Audubon's time, but good fortune brought us to the spot during calm weather, and the boat in which the light-keeper met our schooner was readily beached on the hand's-breadth of shore constituting the only port of entry. Once landed, however, the top is now easily reached in a small crate which is hoisted by means of a crane and windlass, operated by the keeper of the lighthouse. The experience of passing so near nesting Murres and Kittiwakes that they may almost be touched is not the least interesting part of a journey through space which it is believed most visitors to the Rock will find possessed of more or less novelty. Alighting on the grassy summit of the Rock, one sees that it contains, in addition to the light- and bomb-houses, a small collection of buildings for the storage of supplies which are brought only twice each year, and for the accommodation of the keeper, his family, and three assistants. With the exception of a few Puffins and Petrels, which live in burrows, no birds now nest on top of the Rock, but they crowd the jutting ledges or eroded shelves of the precipitous faces of the island. In places one can easily clamber down to these ledges and there he will be surrounded by curious groups of sea-fowl, some fearlessly standing, while others whirl by in an endless procession.

In view of the years of persecution to which these birds have been subjected, they are still remarkably tame, and, to a bird-lover, it is an especially grateful experience to be at once received into their ranks. No one, indeed, who has not had the experience can imagine the peculiar sensations which possess the naturalist when, for the first time, he visits a bird island where essentially primeval conditions prevail, and where the birds are so abundant and so unsuspicious that one seems to have reached the heart of the bird world and found existing there the ideal relation between man and the lower animals.

The Birds of the Rock.

Murres (*Uria lomvia et Uria troile*). The Murres, together with the Razor-billed Auk and the Puffin, are members of the

(From " Bird Studies with a Camera," by permission of D. Appleton & Co.)

KITTIWAKES AND YOUNG ON NESTS.

Photographed from nature by F. M. Chapman.

family Alcidæ, a group of sea-birds found only in the North Atlantic and North Pacific. (Several allied species may be found in the general collection of North American Birds, see gallery, Case A.) Everywhere they are island-nesting birds, indeed some of the largest bird islands in northern seas are inhabited almost entirely by Murres:—the Farne Islands off the eastern coast of northern England, the Farallones at the entrance of San Francisco

COMMON MURRE AND EGG.
From the Group.

Bay, and St. Paul Island in Bering Sea, are tenanted by countless individuals of these birds. Murres feed on fish, which they secure by diving, using both wings and feet in propelling themselves while under water. Their note is a hoarse call sounding somewhat like the syllable *murre*, whence their common name. They make no nest, but lay their one peculiarly shaped and colored egg on an exposed ledge of rock or in a similarly unprotected place. The shape of the egg is supposed to be an adaptation to the requirements of the nesting sites, from which a more elliptical or spheri-

cal egg would roll and fall. The pear-shaped Murres' eggs, however, when moved by the bird or wind, revolve about their own point, practically without change of position. The wide variation in the colors of Murres' eggs, no two of which are alike, is thought to aid the birds in recognizing their own eggs.

BRÜNNICH'S MURRE.
From the Group.

When hatched the Murres are covered with a sooty black down. In some instances they are taken to the water when still very young; in others they acquire the power of flight before leaving their birth-place.

Murres' eggs are edible, and for this reason they are often gathered in large numbers by fishermen, or, when they can be disposed of, by "eggers" who make a business of visiting the

haunts of the birds during the egg-laying season. It is stated that some twenty years ago 30,000 dozen Murres' eggs were gathered annually on the Farallone Islands and sold in the San Francisco markets. As a result of this wholesale robbing, the birds decreased in numbers so rapidly that the United States Government forbade their further molestation. It is greatly to be hoped that the Canadian Government will soon take steps to afford similar protection to the Murres of Bird Rock.

Two species of Murres inhabit Bird Rock, the Common Murre (*Uria troile*) and Brünnich's Murre (*Uria lomvia*). To the casual observer the differences distinguishing them are not at once apparent, and the presence of two such closely related birds, of similar habits, in the same place, is an interesting illustration of the retention of specific differences under circumstances unusually favorable for interbreeding.

The Common Murre has a longer, more slender bill and browner head than Brünnich's Murre, which has a relatively short and thick bill with the basal edges of the lower mandible grayish and swollen, and the head dark. The downy young of the Common Murre are sooty black, sprinkled with white; those of Brünnich's Murre are decidedly browner. The Common Murre breeds in the North Atlantic from Bird Rock and the British Islands northward. In winter it ranges southward to the coasts of Massachusetts and northern Africa.

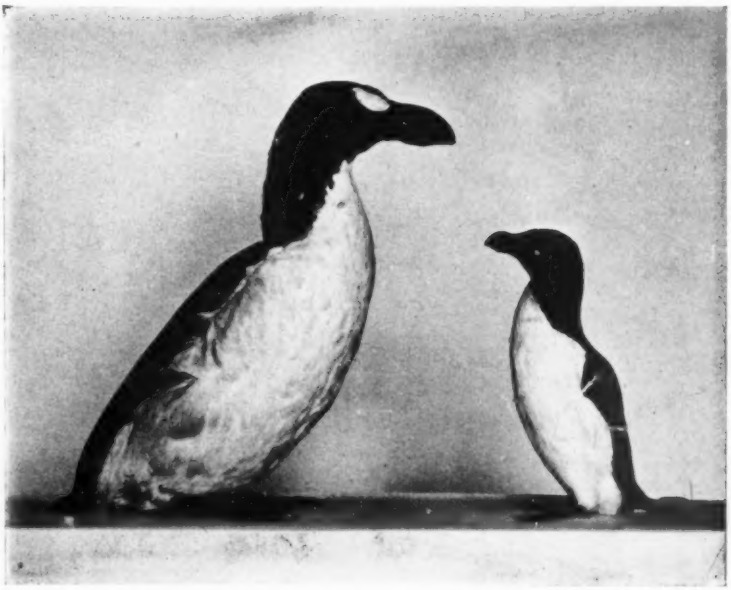
Brünnich's Murre breeds from Bird Rock northward, but is rare in the eastern Atlantic. In winter it is found occasionally as far south as New Jersey, and, sometimes it reaches the interior states as far west as Michigan, by way of the St. Lawrence River and the Great Lakes.

Some Murres have a white ring around the eye extending backward in a white stripe behind it. They are known as "Spectacled Murres," but whether they constitute a distinct species, or are merely an individual variation, is as yet unknown. One individual of this kind is shown in the group.

Razor-billed Auk (*Alca torda*). The Razor-bill is the nearest existing relative of the extinct Great Auk, which it resembles in general appearance, but from which it differs in possessing the power of flight. This species lays its single egg, which is more elliptical than that of the Murres, in natural cavities or other-

wise protected places, and the young are born covered with a brownish down.

The accompanying illustration of the Razor-billed Auk and Great Auk is of interest not alone because the former is and the latter was an inhabitant of Bird Rock, but also because it permits of a comparison of two closely allied birds, one of which has retained, while the other has lost, the power of flight. The Great

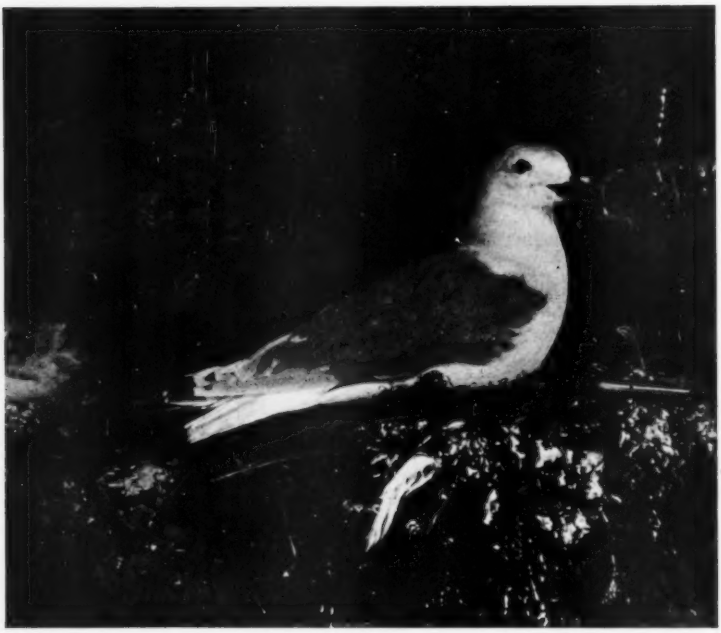


GREAT AUK AND RAZOR-BILLED AUK. SHOWING COMPARATIVE SIZE.
From specimens in the American Museum.

Auk, unlike the Razor-bill, nested on low islands to which it could gain access by means of the feet alone. It fed on fish, migration was unnecessary, and as a result of disuse it evidently lost the power of flight, its wings serving only as paddles for propulsion under the water. Hence it fell an easy victim to fishermen, who, landing on the islets to which it resorted, killed it in great numbers for its flesh. The last living Great Auk was seen in 1844, and all that remains of the myriads described by the early voyagers is some 77 skins, a few skeletons, and 70 eggs.

(See especially in this connection the skin, skeleton, and cast of the egg of the Great Auk in the Main Bird-Hall.)

The Razor-bill breeds from the Bird Rocks and British Islands northward and in winter is found as far south as Long Island and the Mediterranean.

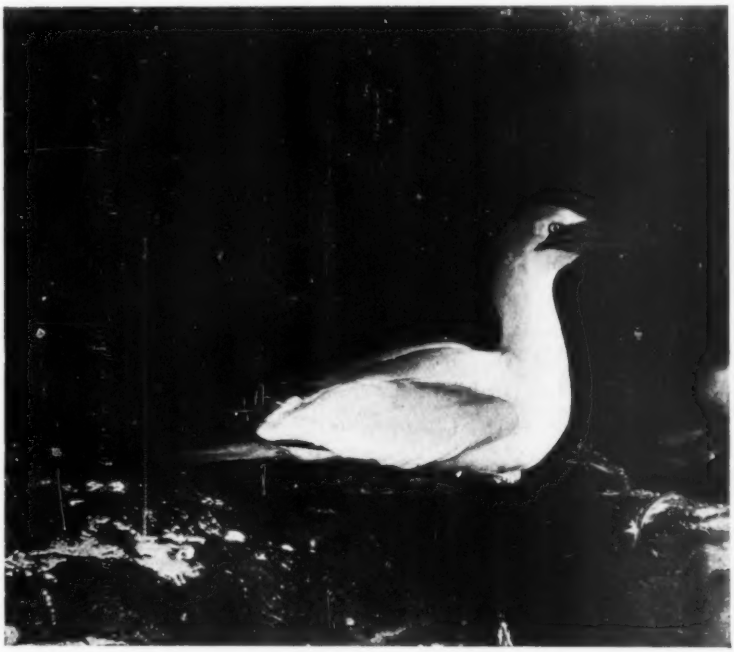


KITTIWAKE GULL ON NEST.
From the Group.

Kittiwake Gull (*Rissa tridactyla*). From six to eight hundred Kittiwake Gulls nest on Bird Rock. They place their nests of sea-weed on the less accessible ledges and doubtless for this reason are less preyed upon by man than are the Murres. Kittiwakes are the only birds on the Rock which lay more than one egg; their nests containing two or three. The young are born covered with down, and during their first winter differ from adults in having the tip of the tail and hind neck black. The birds of this species feed on fish and drink salt water in preference to fresh. Their name is derived from their singular call,

which resembles the syllables *kit-ti-wake*, several times repeated. Kittiwakes nest from Bird Rock and the British islands northward, and in winter range southward to Virginia and the Canaries.

During their winter wanderings Kittiwakes are true sea-gulls,



GANNET.
From the Group.

rarely visiting our inner harbors and bays, where the common winter gull is the Herring Gull, the adults of which, though much larger, are not unlike adult Kittiwakes in color; those born the preceding summer being grayish. (See gallery, case B, for this and other species of American gulls.)

Gannet (*Sula bassana*). Gannets nest on certain small islets off the British coast, in the Faroes, and in Iceland, but in America breed only on Bird Rock and Bonaventure, 150 miles to the west. In the winter they range southward, keeping usually well

off-shore, to northern Africa and the Gulf of Mexico. Of the 100,000 Gannets which were estimated by Mr. Bryant to be nesting on the top of Bird Rock in 1860, no mention being made of those occupying the sides, only about 1,500 remain. Gannets are remarkably impressive birds when on the wing, possessing in an unusual degree power and grace of motion. They secure their food of fish by diving, often from a height of forty feet or more, half closing their wings and plunging into the water with terrific force. The young are born naked, but their black skin is soon covered by white down, which, before they leave the nest, is replaced by gray plumage.

Gannets are the only representatives of their family in northern waters, the remaining species of the group being found in the tropics, where they are known by the name of Booby. Whenever found, however, they are island-nesting birds, not one species of Gannet, so far as known, nesting on the mainland. (For other species, see gallery, case C.)

Puffins (*Fratercula arctica*). Not more than two hundred Puffins breed on Bird Rock. They place their nest, with its single white egg, at the end of burrows which they excavate near the summit of the Rock. When captured, the birds make every effort to use their singularly formed bill, and as a weapon of defense they can inflict a dangerous wound with it.

When walking or perching they stand erect on the toes, while the Murres and Razor-bills rest on the whole foot. Puffins are called " Paroquets " by the French Canadians, and both in appearance and actions they resemble those birds. The call of the Puffin, however, is a hoarse grunt, instead of the shrill squawk emitted by the Paroquet.

Closely allied species are found in the North Pacific (see case, this hall), where they are an important article of food among the natives, who also employ their singularly formed bill in the ornamentation of their ceremonial garments. Aprons with Puffin bills attached to them to produce a rattling noise as the wearer danced, may be seen in hall No. 10[illegible], on the ground floor of the Museum.

Leach's Petrel (*Oceanodroma leucorrhoa*). Puffins sometimes share their burrows with the Leach's Petrel or " Mother Carey's Chicnke," but these interesting little birds also excavate burrows

of their own. They make their nest of grasses and feathers and lay therein a single white egg.

Although diurnal at sea, where they are a familiar sight as in their search for food they course to and fro over the wakes of vessels, Petrels are nocturnal on land, visiting their nests only

PUFFIN.
From the Group.

at night to feed their young or change places with their mate, who has passed the day upon the nest. At birth the young are so thickly covered with gray down that they have little resemblance to birds. Their nocturnal habits have led to the general belief that Petrels never visit the land and that they hatch their egg beneath their wing.

Petrels are relatives of the Albatross, which, with other members of the same order (Tubinares, or tube-nosed birds, in

reference to the peculiar shape of the nostrils), may be found in gallery, case C, and main Bird Hall, case B.

The Making of the Group.

In the accompanying group the preceding seven species of birds are shown with their nests, eggs, and young. While the attempt to bring them within the comparatively narrow limits of a museum case has necessitated the combination of typical sec-

LEACH'S PETREL AND YOUNG IN NEST.
From the Group.

tions of the Rock, the birds nevertheless have been arranged with due reference to their association in life, and it is believed that when taken in connection with the photographs from nature displayed on top of the case, the group correctly represents the conditions of bird life prevailing on Bird Rock.

The birds were mounted and their surroundings prepared, under the writer's direction, by Mr. H. C. Denslow of the Museum's Department of Taxidermy.

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